Whereas, it <u>should</u> have read:

"(i) any AC voltage, of frequency equal to that of the inverter AC voltage, existing between the reference terminal and the first DC terminal is of negligible magnitude compared with the magnitude of the inverter AC voltage; and (ii) any AC voltage, of frequency equal to that of the [high-frequency] <u>inverter</u> AC voltage, existing between the first and second DC terminals is of very low magnitude in comparison with the magnitude of the inverter AC voltage".

With the indicated corrections, perhaps Examiner can more clearly understand the claim. However, just in case and in response to Examiner's inquiry as to "Where in the specification is this phenomena described", Applicant provides the following additional explanation.

As would be entirely clear to a person possessing ordinary skill in the particular art pertinent hereto, in Applicant's electronic ballast of Fig. 1, due to the inherently required high filtering effect of capacitors C1 & C2 at 60 Hz (note: these capacitors have to function properly for <u>voltage doubling</u> at 60 Hz line input, which inherently calls for an extra high degree of filtering at <u>60 Hz</u>), any AC voltage existing between the DC terminals (i.e., across the two series-connected capacitors C1 & C2) and which is of frequency equal to the <u>30 kHz</u> inverter output voltage, must necessarily be of negligibly small magnitude. For entirely equivalent reasons, an AC voltage of that 30 kHz frequency existing between the reference terminal (e.g., junction J) and one of the DC terminals must also be of negligibly small magnitude.

Referring to the above-identified "phenomena", Examiner then asks:

"Is it an advantage provided by the present circuit?".

The answer to that question is another question: Advantage over what?

In any case, the cited "phenomena" simply represents a feature that helps "characterize" the invention defined by claim 1. Per se, it does not define any particular "advantage".

Then, with respect to this "advantage", Examiner goes on to ask:

If it is provided by certain features of the present circuit, what are the features?".

In response, Applicant refers to discussion above.

Then, Examiner goes on to state that:

"if an AC voltage of "high-frequency AC voltage" frequency exists across the DC terminals ("the high-frequency AC voltage has no antecedence, and "existing" sould probably be --exsists--) then it is of very low magnitude compared to the inverter AC voltage - also for some reason. Why, etc. ... same questions)".

Applicant does not understand Examiner's statement.

If Examiner means to refer to the above-cited part of claim 1, Applicant points out that he does not use terms in claim 1 equivalent to those Examiner seems to allege.

Finally, Examiner states that:

"Answers to the foregoing questions will provide information as to whether or not each of the respective elements of the present circuit can or can not be construed to cover the claimed phenomena".

In response to that statement, Applicant comments as follows.

With his claims, Applicant does not intend to cover any one or more "phenomena". Instead, Applicant intends to cover the particular arrangements (or structures) expressly defined by the various claims; each of which arrangements consists of a combination of plural individual elements; each individual element being defined by its function and its minimally necessary characterizing features.

CONCLUDING REMARKS

To make it easier for Examiner to read and interpret the claims, all the claims have been re-written (i.e., "cleaned up") and presented in the attached document entitled RE-WRITTEN CLAIMS in Serial No. Ø8/196,812.

These re-written claims are numbered from 47 through 92 and correspond directly to original claims 1-46, all respectively.

Ole K. Nilssen, Pro Se Applicant

RE-WRITTEN CLAIMS in Serial No. 08/196,812

47. An arrangement comprising:

a source operative to provide, between a first and a second DC terminal, a DC voltage of substantially constant magnitude;

an inverter circuit connected with the DC terminals and functional to provide an inverter AC voltage between a reference terminal and an inverter output terminal; the inverter AC voltage being of a frequency several times higher than 60 Hz; the inverter circuit including a tuned L-C circuit connected in circuit with the inverter output terminal and the reference terminal; the L-C circuit having a tank capacitor parallel-connected with a tank inductor and being resonant at or near the frequency of the inverter AC voltage; the inverter circuit being further characterized in that: (i) any AC voltage, of frequency equal to that of the inverter AC voltage, existing between the reference terminal and the first DC terminal is of negligible magnitude compared with the magnitude of the inverter AC voltage; and (ii) any AC voltage, of frequency equal to that of the inverter AC voltage existing between the first and second DC terminals is of very low magnitude in comparison with the magnitude of the inverter AC voltage; and

gas discharge lamp means connected in circuit with the L-C circuit.

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48. The arrangement of claim 47 wherein the gas discharge lamp means includes a gas discharge lamp series-connected with a current-limiting reactance means.

49. The arrangement of claim 47 wherein the inverter AC voltage is of substantially sinusoidal waveform.

50. The arrangement of claim 47 where the inverter circuit is additionally characterized by including a first and a second transistor; the first transistor having a first transistor terminal; the second transistor having a second transistor terminal; the first transistor terminal being connected to the second transistor terminal; both transistor terminals being connected in circuit with the inverter output terminal; the inverter circuit being yet further characterized in that any voltage present between the inverter output terminal and either one of the two transistor terminals is of negligible magnitude compared with the magnitude of the inverter AC voltage.

51. The arrangement of claim 47 wherein the inverter circuit includes a first transistor having a first transistor terminal connected with the inverter output terminal in such manner that any voltage existing between the inverter output terminal and the first transistor terminal is of magnitude negligible compared with the magnitude of the inverter AC voltage; there being substantially zero resistance to the flow of unidirectional current between the inverter output terminal and the first transistor terminal.

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52. An arrangement comprising:

a DC source functional to provide a DC supply voltage between a first and a second DC supply terminal;

an inverter circuit connected between the first and second DC supply terminals; the inverter circuit being functional to supply a high-frequency substantially sinusoidal AC output voltage between a first and a second AC output terminal; the high-frequency AC output voltage being of frequency several times higher than 60 Hz; any high-frequency AC voltage that might exist between the second AC output terminal and one of the DC supply terminals being of very small magnitude compared with the magnitude of the high-frequency AC output voltage; the inverter circuit being further characterized by including: (i) a first transistor having a first control input terminal, a first output terminal, and a first common terminal; and (ii) a second transistor having a second control input terminal, a second output terminal, and a second common terminal; the second output terminal being connected with the first common terminal, thereby to form a junction terminal; the junction terminal being connected with the first AC output terminal in such manner that: (i) substantially no unidirectional voltage drop can exist between the junction terminal and the first AC output terminal, and (ii) any alternating voltage existing between the junction terminal and the first AC output terminal is of very small magnitude compared with the magnitude of the high-frequency AC output voltage; a unidirectional voltage existing between the second common terminal and the first output terminal; the average magnitude of the unidirectional magnitude being substantially equal to that of the DC supply voltage; and

a gas discharge lamp connected in circuit with the AC output terminals.

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53. The arrangement of claim 52 wherein the inverter circuit is further characterized by being connected with the DC supply terminals by way of an inductor means.

54. An arrangement comprising:

an AC source functional to supply an AC power line voltage at a pair of AC power line terminals;

rectifying and filtering means connected with the AC power line terminals and functional to provide a DC supply voltage at a pair of DC supply terminals;

a gas discharge lamp having lamp terminals; and

an inverter-type ballasting circuit having DC input terminals connected with the DC supply terminals and AC output terminals connected with the lamp terminals; the inverter-type ballasting circuit being functional to power the gas discharge lamp and being otherwise characterized by: (i) having a first transistor with a first transistor terminal connected with a second transistor terminal of a second transistor; and (ii) causing a substantially sinusoidal AC voltage to exist between the first transistor terminal and one of the DC input terminals; the frequency of the substantially sinusoidal AC voltage being several times higher than that of the AC power line voltage.

cont. F1

55. The arrangement of claim 54 wherein a parallel-tuned L-C circuit is connected in circuit between the first transistor terminal and one of the DC input terminals; the parallel-tuned L-C circuit being naturally resonant at or near the fundamental frequency of the substantially sinusoidal AC voltage.

56. The arrangement of claim 54 wherein the DC source is additionally characterized by including circuitry operative to cause the absolute magnitude of the DC supply voltage to be larger than the absolute peak magnitude of the AC power line voltage.

57. The arrangement of claim 54 wherein the inverter-type ballasting circuit is further characterized in that: (i) the first transistor has a first control input terminal, a first output terminal, and a first common terminal; (ii) the second transistor has a second control input terminal, a second output terminal, and a second common terminal; (iii) the first transistor terminal is the first transistor's common terminal; (iv) the second transistor terminal is the second transistor's output terminal.

58. The arrangement of claim 57 wherein the inverter-type ballasting means is yet further characterized in that: (i) a unidirectional voltage exists between the second transistor's common terminal and the first transistor's output terminal; and

(ii) the absolute peak magnitude of the unidirectional voltage is larger than the absolute peak magnitude of the AC power line voltage.

59. An arrangement comprising:

an AC source functional to supply an AC power line voltage at a pair of AC power line terminals;

rectifying and filtering means connected with the AC power line terminals and functional to provide a substantially constant-magnitude DC supply voltage between a first and a second DC supply terminal;

an inductor means having a first winding and a second winding;

a lamp load having a pair of load terminals and including a series-combination of a gas discharge lamp and a current-limiting reactance means; and

an inverter circuit having: (i) a pair of AC output terminals connected with the load terminals and across which is provided an AC output voltage; (ii) a first terminal connected with the first DC supply terminal by way of the first winding; and (iii) a second terminal connected with the second DC supply terminal by way of the second winding.

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60. The arrangement of claim 59 wherein the inverter circuit is further characterized by having a pair of transistors series-connected between the first terminal and the second terminal.

61. The arrangement of claim 59 wherein the rectifying and filtering means includes circuitry operative to cause the absolute magnitude of the DC supply voltage to be substantially higher than the absolute peak magnitude of the AC power line voltage.

62. The arrangement of claim 59 wherein the first winding and the second winding are magnetically coupled with each other.

63. The arrangement of claim 59 wherein the AC outout voltage has a substantially sinusoidal waveform.

64. The arrangement of claim 59 wherein the current-limiting reactance means is substantially a capacitive reactance.

65. An arrangement comprising:

an AC source functional to supply an AC power line voltage at a pair of AC power line terminals;

rectifying and filtering circuit connected with the AC power line terminals and functional to provide a filtered DC supply voltage between a first and a second DC supply terminal;

an inductor means having a first winding and a second winding;

a lamp load having a pair of load terminals; and

an inverter circuit characterized by: (i) having a pair of AC output terminals connected with the load terminals; (ii) providing a substantially sinusoidal AC output voltage across the AC output terminals; (iii) having a first terminal connected with the first DC supply terminal by way of the first winding; and (iv) having a second terminal connected with the second DC supply terminal by way of the second winding.

66. The arrangement of claim 65 wherein a pair of series-connected transistors is connected between the first terminal and the second terminal.

67. An arrangement comprising:

a rectifying and filtering circuit characterized by: (i) having a pair of AC power input terminals operable to connect with a pair of AC power line terminals across which exists an AC power line voltage, and (ii) having sub-circuitry operative, when the AC power input terminals are indeed so connected, to provide a DC supply voltage between a pair of DC supply terminals, the absolute magnitude of which DC supply voltage being distinctly higher than the peak absolute magnitude of the AC power line voltage; the rectifying and filtering circuit being further characterized by having an electrically conductive path between one of the DC supply terminals and one of the AC power input terminals, which electrically conductive path is characterized by existing irrespective of whether or not the AC power input terminals are connected with the AC power line terminals;

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a gas discharge lamp having lamp terminals; and

an inverter-type ballasting circuit having DC input terminals connected with the DC supply terminals and AC output terminals connected with the lamp terminals, thereby to supply a lamp current to the gas discharge lamp; the inverter-type ballasting circuit being further characterized by: (i) including a first transistor having a first transistor terminal connected to a second transistor terminal of a second transistor; (ii) having the two transistors series-connected between a first pair of terminals; and (iii) having a second pair of terminals between

which exists a substantially sinusoidal AC voltage of frequency several times higher than that of the AC power line voltage, one of the second pair of terminals being the first transistor terminal.

68. (Amended) The arrangement of claim 21 wherein the inverter-type ballasting circuit is additionally characterized by including [sub-circuitry operative] a sub-circuit functional to cause [in that] a unidirectional voltage to exist[s] between the first pair of terminals, the average magnitude of which unidirectional voltage is substantially equal to [the same as] that of the DC supply voltage.

69. The arrangement of claim 67 wherein the inverter-type ballasting circuit is additionally characterized in that the other one of the second pair of terminals is one of the DC supply terminals.

cont.

70. The arrangement of claim 67 wherein the rectifying and filtering circuit is additionally characterized in that the magnitude of the DC supply voltage is substantially constant.

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71. The arrangement of claim 67 wherein the rectifying and filtering circuit is additionally characterized by being powered from ordinary 60 Hz single-phase AC power line voltage.

72. An arrangement comprising:

a first sub-circuit: (i) having AC power input terminals connected with an ordinary single-phase AC power line voltage, and (ii) being operative to provide a substantially constant-magnitude DC supply voltage between a first and a second DC supply terminal; the first sub-circuit having an electrically conductive path between one of the DC supply terminals and one of the AC power input terminals;

a second sub-circuit including an inductor means having a first winding and a second winding;

a lamp load having a pair of load terminals and including a series-combination of a gas discharge lamp and a current-limiting reactance means; and

a third sub-circuit circuit having: (i) a pair of AC output terminals connected with the load terminals and across which is provided an AC output voltage of frequency several times higher than that of the AC power line voltage; (ii) a first terminal connected with the first DC supply terminal by way of the first winding; and (iii) a second terminal connected with

the second DC supply terminal by way of the second winding; a unidirectional voltage existing between the first terminal and the second terminal; the third sub-circuit also having a first and a second transistor series-connected between the first terminal and the second terminal; the two transistors being connected together at a common terminal; the average magnitude of the unidirectional voltage being substantially equal to that of the DC supply voltage.

73. The arrangement of claim 72 wherein the third sub-circuit is additionally characterized by having sufficient structure to cause a substantially sinusoidal AC voltage to exist between the common terminal and one of the DC supply terminals.

74. The arrangement of claim 72 wherein the third sub-circuit is additionally characterized in that the first transistor has a first transistor terminal connected to the B- terminal and the second transistor has a second transistor terminal connected to the B+ terminal.

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75. The arrangement of claim 72 wherein the first sub-circuit is additionally characterized by including sufficient structure to cause the ~~absolute~~ magnitude of the DC supply voltage to be distinctly higher than the absolute peak magnitude of the AC power line voltage.

76. The arrangement of claim 72 wherein the third sub-circuit is additionally characterized by having a third and a fourth transistor series-connected between the B- terminal and the B+ terminal.

77. An arrangement comprising:

a first sub-circuit: (i) having AC power input terminals connectable with an ordinary single-phase AC power line voltage, and (ii) being operative to provide a substantially constant-magnitude DC supply voltage between a first and a second DC supply terminal;

a second sub-circuit including an inductive reactance;

a gas discharge lamp having a pair of lamp terminals; and

a third sub-circuit circuit having: (i) a first terminal and a second terminal connected with the first and second DC supply terminals by way of the second sub-circuit; (ii) a unidirectional voltage existing between the first terminal and the second terminal; (iii) sufficient structure to cause the

average magnitude of the unidirectional voltage to be substantially equal to that of the DC supply voltage; (iv) a first and a second pair of transistors; (v) each transistor pair being series-connected between the first terminal and the second terminal; (vi) the first pair of transistors being connected together at a first common terminal; (vii) the second pair of transistors being connected together at a second common terminal; (viii) sufficient structure to cause a substantially sinusoidal AC voltage to exist between the first and second common terminals; and (ix) a fourth sub-circuit connecting the lamp terminals with the first and second common terminals, thereby to power the gas discharge lamp with an alternating current.

78. The arrangement of claim 77 wherein the third sub-circuit is additionally characterized by including structure sufficient to cause a first AC voltage to exist between the first common terminal and one of the DC supply terminals; which first AC voltage has a substantially sinusoidal waveform.

cont. F1

79. The arrangement of claim 77 wherein the third sub-circuit is additionally characterized in that it includes a self-oscillating full-bridge inverter.

80. An arrangement comprising:

a first sub-circuit: (i) having AC power input terminals connectable with an ordinary single-phase AC power line voltage, and (ii) being operative to provide a substantially constant-magnitude DC supply voltage between a negative and a positive DC supply terminal; a first capacitor being connected between the negative DC supply terminal and a reference terminal; a second capacitor being connected between the positive DC supply terminal and the reference terminal;

a second sub-circuit including an inductor means having a first inductor winding and a second inductor winding;

a gas discharge lamp; and

a third sub-circuit circuit having: (i) a first terminal and a second terminal connected with the negative and the positive DC supply terminals by way of the first and the second inductor windings thereby to cause a unidirectional voltage to exist between the first terminal and the second terminal; the average magnitude of the unidirectional voltage being substantially equal to that of the DC supply voltage; (ii) a pair of transistors series-connected between the first terminal and the second terminal; (iii) the pair of transistors connected

together at a joint terminal; (iv) sub-circuitry functional to cause a substantially sinusoidal AC voltage to exist between the joint terminal and the reference terminal; and (v) the gas discharge lamp connected in circuit with the joint terminal and the reference terminal.

81. The arrangement of claim 80 wherein the third sub-circuit is additionally characterized by including a tuned LC circuit connected with the joint terminal as well as with the reference terminal.

82. The arrangement of claim 80 wherein the third sub-circuit is additionally characterized by including structure sufficient to cause it to constitute an inverter circuit that is self-oscillating, by way of positive feedback, at the frequency of the substantially sinusoidal AC voltage.

83. The arrangement of claim 80 wherein the first sub-circuit is additionally characterized in that: (i) it has an electrically conductive path between one of the DC supply terminals and one of the AC power input terminals; and (ii) it includes structure operative to cause the absolute magnitude of the DC supply voltage to be distinctly larger than the peak absolute magnitude of the AC power line voltage.

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84. An arrangement comprising:

a first electronic assembly having AC power input terminals operable to connect with an AC power line voltage and, when indeed so connected, to provide a DC supply voltage of substantially constant magnitude between a pair of DC supply terminals; the first electronic assembly also having structure operative to cause the absolute magnitude of the DC supply voltage to be distinctly higher than the absolute peak magnitude of the AC power line voltage;

a gas discharge lamp having lamp terminals; and

a second electronic assembly having: (i) DC input terminals connected with the DC supply terminals; (ii) AC output terminals connected with the lamp terminals by way of a current-limiting reactance means, thereby to supply the gas discharge lamp with an alternating lamp current of frequency substantially higher than that of the AC power line voltage; and (iii) an inductor means and a capacitor means being effectively parallel-connected across the AC output terminals, thereby to form a parallel-tuned L-C circuit resonant at or near the frequency of the alternating lamp current.

85. The arrangement of claim 84 wherein the first electronic assembly is additionally characterized by including structure functional, at least periodically, to cause an electrically conductive path to exist between one of the DC supply terminals and one of the AC power input terminals.

86. The arrangement of claim 84 wherein the second electronic assembly is additionally characterized by including a transistor as well as other structure connected with the DC input terminals in such manner as to cause the transistor to be subjected to a voltage of peak absolute magnitude in excess of the peak absolute magnitude of the AC power line voltage; the transistor alternating, at a frequency equal to that of the lamp current, between being conductive and being non-conductive.

87. The arrangement of claim 84 wherein the second electronic assembly includes at least one periodically conducting semiconductor, but does not include a periodically conducting thyristor.

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88. The arrangement of claim 84 wherein the second electronic assembly is additionally characterized by having structure functional to cause it to draw a unidirectional current from the DC supply terminals by way of an inductor means.

89. The arrangement of claim 88 wherein the second electronic assembly is yet additionally characterized by including: (i) a pair of transistors, (ii) structure functional to cause the transistors to conduct in an alternating manner, and (iii) a parallel-tuned LC circuit; the alternatingly conducting transistors being operative to convert the unidirectional current to an alternating current; which alternating current is then being supplied to the parallel-tuned LC circuit.

90. An arrangement comprising:

a first electronic assembly having AC power input terminals operable to connect with an AC power line voltage and, when indeed so connected, to provide a DC supply voltage of substantially constant magnitude between a pair of DC supply terminals;

a gas discharge lamp having lamp terminals; and

a second electronic assembly having: (i) DC input terminals connected with the DC supply terminals; (ii) a pair of transistors connected together at a junction terminal; (iii)

a pair of output terminals; (iv) structure sufficient to cause (a) the transistors to conduct alternatingly, (b) to cause a first substantially sinusoidal voltage to exist between the junction terminal and one of the DC supply terminals, and (c) to cause a second substantially sinusoidal voltage to exist between the output terminals; and (v) sub-circuitry connected between the output terminals and the lamp terminals, thereby to provide power to the gas discharge lamp.

91. The arrangement of claim 90 further characterized in that the two transistors are series-connected between a first terminal and a second terminal.

92. An arrangement comprising:

a first electronic assembly having AC power input terminals connected with an AC power line voltage and being functional to provide a DC supply voltage between a negative DC supply terminal and a positive DC supply terminal;

a gas discharge lamp having lamp terminals; and

a second electronic assembly having:

(i) DC input terminals connected with the DC supply terminals;

(ii) a pair of transistors connected together at a junction terminal;

(iii) a pair of output terminals;

(iv) structure functional (a) to connect the transistors in circuit with the DC input terminals, (b) to cause the transistors to conduct alternatingly, (c) to cause a substantially sinusoidal voltage to exist between the junction terminal and one of the DC supply terminals, and (d) to cause a substantially sinusoidal voltage to exist between the output terminals; and

(v) sub-structure connected between the output terminals and the lamp terminals, thereby to provide power to the gas discharge lamp.

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